

REMARKS

Claims 1-4 and 6-18 are pending in the present application. Claims 1 and 17 have been amended to correct typographic errors and/or to further clarify the subject matter recited therein. No new matter is added by the new claim and amendments, which find support throughout the specification and figures. In view of the amendments and the following remarks, favorable reconsideration of this application is respectfully requested.

Claims 1, 2, 10, 11, and 15 stand rejected under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 6,281,960 to Kishimoto et al. (hereinafter Kishimoto) in view of United States Patent No. 6,067,144 to Murouchi (hereinafter Murouchi) and United States Patent No. 6,275,280 to Kajita et al. (hereinafter Kajita).

Claim 1 relates to a liquid crystal display panel that includes, *inter alia*, a pair of substrate structures having plural pixels where an image is produced and liquid crystal filling a gap between the pair of the substrate structures and selectively making the pixels dark and bright for producing the image. The liquid crystal display panel of claim 1 also includes column spacers formed on one of the substrate structures of the pair and held in contact with the other of the substrate structures, the ratio of the total contact area between the column spacers and the other of the substrate structures to the total area occupied by the plural pixels being within the range from 0.050 percent to 0.150 percent, ***at least one of the column spacers being formed within a matrix of the plural pixels***, the matrix of the plural pixels being formed by rows and columns of the plural pixels. In the liquid crystal display panel of claim 1, a sealing layer is formed between the matrix of the plural pixels and a peripheral area and ***none of the column spacers are formed in an area of the sealing layer***.

Neither Kishimoto, Murouchi, nor Kajita discloses, teaches, or suggests the feature of no column spacers in the area of a sealing layer. According to the Examiner, Murouchi discloses this feature (Office Action, page 6, paragraph 4, lines 5-6), citing column 5, line 7. However, there is no mention in Murouchi of the feature of no column spacers in the area of the sealing layer. Although Figs. 6-8 in Kajita appear to show column spacers 24, (Office Action, page 4, line 20, to page 5, line 2), there is no exclusion of column spacers from a sealing layer area where the sealing layer is formed between the matrix of pixels and a peripheral area.

The Examiner responds to the above argument, which was substantially presented in the amendment of March 9, 2005, by stating that:

Furthermore, Kishimoto discloses the column spacers as formed within the matrix of plural pixels. Murouchi teaches the sealant placed according to conventional means at a periphery of the substrates outside of the matrix of plural pixels. The column spacers disclosed by Kishimoto ***therefore would not have been placed within the sealing material when the sealing material is placed according to conventional methods of the art***, such as taught by Murouchi.

(Office Action; page 3, lines 11-15; emphasis added). However, there is no support for the conclusion of the Office Action. Nowhere does Kishimoto disclose that the column spacers are not formed in an area of a sealing layer, since Kishimoto does not disclose a sealing layer, as the Office Action recognizes (Office Action; page 3, lines 1-3). Kishimoto states:

a light-shielding, photo-sensitive black resin layer (BM) is ***applied on the whole surface of the glass substrate*** by a dry film resist method, and a portion of the black resin layer which is formed on the red, green and blue color filters 6a, 6b and 6c are removed by using a photolithography technique (FIG. 3D). ... The black resin layer 12c formed on the color resin layer 8a, 8b and 8c forms a pillar. ... The stacked color resin layers 8a, 8b and 8c as well as the ***pillar 12c formed thereon will later function as the spacer 48 for defining the gap*** between the substrates.

(Kishimoto; col. 7, lines 50-65; emphasis added). As is apparent from the cited section, Kishimoto discloses spacers positioned on the whole surface of the substrate.

In contrast, the present invention limits the positioning of spacers to non-sealing areas. By limiting the location of the column spacers, the present invention avoids the problem discussed in the Background and Summary sections of the present application of variable spacing between the counter substrate structure and the active matrix substrate structure. As the Specification states, “[i]f the column spacer 41 is overlapped with the spherical spacer 33, the active matrix substrate structure 46 is widely spaced from the counter substrate structure 43.” (Specification; page 16, lines 20-22). To avoid this unwanted result, the present invention maintains a uniform distance between the substrates by not forming any of the column spacers in an area of the sealing layer.

Since neither Kishimoto, Murouchi, nor Kajita disclose or suggest a sealing layer with no column spacers, the combination of the references, the appropriateness of which is respectfully not conceded, does not render the present invention unpatentable. Therefore, the rejection of claim 1 should be withdrawn.

Claims 2, 10, and 11 depend from claim 1 and are therefore allowable for at least the same reasons as claim 1 is allowable.

Independent claim 15 also provides that none of the column spacers are formed in an area of a sealing layer formed between a matrix of the pixels and a peripheral area. Therefore, claim 15 is allowable for at least the same reasons as claim 1 is allowable as discussed above.

Claims 3, 12, 14, and 16-18 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kishimoto in view of Murouchi and Kajita, and further in view of United States Patent No. 6,288,766 to Mashiko et al. (hereinafter Mashiko).

The addition of Mashiko fails to cure the critical deficiency discussed above in regard to Kishimoto and Murouchi as applied to claims 1 and 15, and therefore claims 3, 12, and 14 are allowable at least for the same reasons as claim 1 is allowable, and claims 16-18 are allowable for at least the same reasons as claim 15 is allowable.

Claims 4 and 13 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kishimoto in view of Murouchi, Kajita, and Mashiko, and further in view of United States Patent No. 6,010,384 to Nishino et al. (hereinafter Nishino).

The addition of Nishino fails to cure the critical deficiency discussed above in regard to Kishimoto and Murouchi as applied to claim 1, and therefore claims 4 and 13 are allowable at least for the same reasons as claim 1 is allowable.

Claim 6 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Kishimoto in view of Murouchi and Kajita, and further in view of United States Patent No. 6,414,733 to Ishikawa et al. (hereinafter Ishikawa).

The addition of Ishikawa fails to cure the critical deficiency discussed above in regard to Kishimoto and Murouchi as applied to claim 1, and therefore claim 6 is allowable at least for the same reasons as claim 1 is allowable.

Claims 7-9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Kishimoto in view of Murouchi, Kajita, and Ishikawa, and further in view of United States Patent No. 5,739,888 to Ogura (hereinafter Ogura).

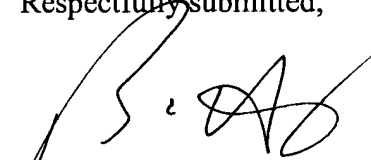
The addition of Ogura fails to cure the critical deficiency discussed above in regard to Kishimoto and Murouchi as applied to claim 1, and therefore claim 7-9 are allowable at least for the same reasons as claim 1 is allowable.

CONCLUSION

In view of the remarks set forth above, this application is believed to be in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged to Deposit Account No. 50-1290.

Respectfully submitted,



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